**INDIAN INSTITUTE OF TECHNOLOGY BOMBAY**

**MATERIALS MANAGEMENT DIVISION**

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**PR No. 1000028670** **Rfx No. 6100001380**

# TECHNICAL SPECIFICATION FOR THERMAL/ OPTICAL CARBON ANALYSER

Thermal/Optical Carbon Analyser for quantitative estimation of Organic Carbon (OC) and Elemental Carbon (EC) in ambient atmospheric aerosols collected on quartz or other suitable filters.
The instrument must have the following features:

## 1. General:

a) Should have stepwise heating and monitoring of OC and EC.

b) Should have laser-based pyrolysis correction.

c) Should be compatible with accepted NIOSH 5040, EUSAAR2, IMPROVE-A methods.

## 2. Measurement:

a) Measurement Range:

TC: 0.2 to 600 µg/cm2, OC: 0.2 to 600 µg/cm2, EC: 0.2 to 30 µg/cm2
Limit of Detection for TC, OC, EC: 0.1 µg/cm2 or less

b) Operating altitude: up to 2000 m

c) Operating temperature range: 5-degree Celsius to 40 degree Celsius

d) Operating Relative Humidity: up to 80%

## 3. Detection and Oven System:

a) Detection technique: FID

b) Optical detection of charring process - based on the attenuation of Red laser (wavelength ~ 660 nm)

c) Should have Quartz Sample Oven and separate integrated oxidizer bed

d) Should have requisite valve/ flow sensor components

**4. Calibration:**

External Standard – Using an external standard calibration gas.

Primary calibrations should be referenced against sucrose solutions or NIST traceable gas standards.

**5. Software: for instrument operation/control/data acquisition**

**6. Power requirement: 230 V AC, 50-60 Hz**

**7. Installation and Training: 2 days at IIT-B**

**8. Warranty: 3 years**